CLAIMS

What we claim is:

1. A method of creating an image which includes the steps of:

obtaining a substantially linear representation of the brightness of an image, the method comprising, for each of a set of pixels (x, y) in a two dimensional array, calculating an estimate of the true image intensity ($\hat{i}_{xy}$) as a weighted average of n samples of the apparent image intensity ($v_{n,xy}$) as

$$\hat{i}_{xy} = \frac{\sum_n \left(w_{n,xy} \left(\frac{v_{n,xy} - C}{KT_n} \right) \right)}{\sum_n w_{n,xy}} = \frac{1}{K} \frac{\sum_n \left(w_{n,xy} \left(\frac{v_{n,xy} - C}{T_n} \right) \right)}{\sum_n w_{n,xy}}$$

where $v_{n,xy}$ is the apparent intensity measured, T_n is the exposure time, K is the gain of the system, C is an offset and $w_{n,xy}$ is a weighting factor which is defined to maximise the signal to noise ratio and discard insignificant, that is saturated or near zero, values;

thereafter saving each of the values $\hat{i}_{xy}$ together with other data representing the image; and

outputting the image to a display or to a printing device.

2. A method according to claim 1, wherein a linear relationship is established between images recorded with different exposure times by the use of a perpendicular regression technique whereby each image is transformed to match the scale and offset of the first in the series and whereby the weighted average is calculated as:

$$\hat{i}_{xy} = \frac{\sum_n w_{n,xy} \left(\frac{v_{n,xy} - \sum_n b_n}{\prod_n a_n} \right)}{\sum_n w_{n,xy}}$$

where a_n and b_n are the gradient a and offset b measured between image n and image n 1 $(a_1 = 1; b_1 = 0)$ when

$$w_{n,xy} = \begin{cases} \prod_n a_n & v_{\min} < v_{n,xy} < v_{\max} \\ 0 \quad when & v_{n,xy} \geq v_{\max} \\ 0 & v_{n,xy} \leq v_{\min} \end{cases}$$

3. A method according to claim 1 or claim 2, wherein the image is a coloured image and the offset is colour dependent.